

SUMMARY REPORT OF MINING INVESTIGATIONS IN THE ANIAK-
TULUKSAK, GOODNEWS BAY AND KUSKOKWIM MINING DIS-
TRICTS TO COMMISSIONER OF MINES AND ITINERARY
OF J. C. ROEHM, ASSOCIATE ENGINEER, TERRI-
TORIAL DEPARTMENT OF MINES
July 1 to August 10, 1939

July 1-10. The writer spent the time between these dates in the completion of a general geologic map and visiting operations within the area extending from Mt. Hamilton on the north to Marvel Dome on the south, an area 25 miles in length and extending west-east from the foothills of the Kuskokwim flats to the Aniak River watershed, a distance of 20 miles. This area contains 500 square miles, of which 150 square miles along the Tuluksak, Bear Creek and Marvel Creek valleys were aerial photographed. The aerial photos were taken on July 11 from an elevation of 13,000 feet. Since the general land elevation is 1,000 feet, this altitude was used to give the required scale of one inch to the mile. The camera used was a Fairchild, Model F-4 with an F-5 lense. Eastman Super XX Pan Chromatic Aero film roll, size 24 cm. x 75 feet with 100 exposures to the roll was used. The single developed prints are 9 inches square. The photos were taken along parallel flight lines one and one-fourth miles apart at 19 second intervals at a flying speed of 100 miles per hour. This speed gives one exposure every 2,800 feet, giving a 60 per cent overlap in the direction of flight. With the flight lines one and one-fourth miles apart a 25 per cent lap on the sides is obtained. Thus four parallel strips were taken, making an area five miles wide and eight miles long. The area had to be cut into eight mile lengths due to the curvature of the river and three sections of this length were taken on Bear Creek and the Tuluksak. Since considerable film remained on the last roll a single strip was taken down Marvel Creek.

The cost of this aerial photographing to the New York-Alaska Gold Dredging Company was nine dollars per square mile plus transportation costs to and from Nyac of the photographer. The Pacific Aerial Surveys pay the cost of flying while photographing. Two sets of all single prints and a combined photo of all prints are furnished at the above price per square mile. Additional single prints cost fifty cents each. Maps of any scale can be made by enlargement of the original negatives. For large area mapping amounting to a few thousand square miles the rate per square mile is as low as four dollars.

A detail report with conclusions, opinions and results obtained will be written later. The prints will be used as a basis to which the remaining 350 square miles will be added together with the geology. Thus the period of July 1 to 10 was spent mainly following contacts of formations, sketching drainage and topography, and obtaining various elevations. Only general summary data concerning the mining operations will be contained in this summary report.

The total operations in the Aniak-Tuluksak district consist of two dredges, three draglines and one small hydraulic with drag scraper. The three dragline operations are new this year and a total gold production of over \$400,000 is expected this season. Possibilities are good for at least two more operations next year in the Cripple Creek-Fisher Dome section of this district. In this section considerable drilling and test pitting has been done with fair results. To the south of this section new native discoveries were reported on Kopechuck and Quicksilver creeks. The headwaters of these creeks were investigated, but due to lack of definite information the discoveries were not investigated.

The two dredges of the New York Alaska Gold Dredging Corp. began operating on the fourth and fifth of May this season. They have been operating continuously with a production to July 1 of \$100,000. The dragline operation of this company started sluicing on June 25. This operation is on Discovery claim on Bear Creek. The first clean-up on July 4 of 18,000 bedrock feet netted 229 ounces of gold. This is on virgin ground at the mouth of Spruce Creek on ground that was too shallow for the old dredge. A new camp site at the mouth of Spruce Creek on Bear Creek was made this year and a new bunk and cook house was built. A new 5-room bunk house was also built at Nyac to replace the one that burned.

The first unit of the hydro-electric plant, 500 H. P., was put into operation on July 14 of this year and the No. 2 Dredge was transferred to electric power on July 21. The No. 3 dredge will be transferred within a few days. This unit consists of a Morgan-Smith turbine operating an Allis Chalmers 4,000 volt, 50 amp. generator. General Electric equipment is otherwise used. The two diesel units from the dredges are to be transferred to the power house as auxiliary power. The use of this electric power represents a direct saving of \$30,000 on the one unit. The future plans of the company call for two more 500 H. P. units, with a new 6-cubic foot dredge to be constructed this fall and followed by converting the $4\frac{1}{2}$ -cubic foot dredge to a 6-cubic foot in the future.

The company has experienced some trouble with the dragline operation due to lack of experience with this type of operation, and to the abundance of rocks. A new 6-inch Hillman Special placer drill was put into operation this year on Spruce Creek on ground leased from ~~St.~~ John (Slocum), Auld and C. Shoettler. Four holes were drilled with bedrock found at 46 feet and only fine colors obtained. The company has a total of 63 men employed this season.

A The Garrison Company, located on Granite Creek, landed their dragline on the property on July 2 and the crew was engaged in digging a bedrock drain on date of visit. The camp and washing plant were under construction. Mining is to be started within a few days. Only a small amount of test pit work was done last winter by other interests, from whom details and results were not obtained. Last season C. Marsh cleaned 27,000 bedrock feet, part of which was flooded with water, and reported a recovery of 237 ounces of gold. While the ground as far as proven appears to contain workable values, there are various other angles concerning this operation so that the results can only be imagined. The Bering Alaska Placers, Inc., who hold ground on Dugout and Tiny creeks, are inactive this season. KX 91-19

July 11. Nyac to Dominion Creek. The lower section of Dominion Creek was investigated covering a group of 26 claims owned by Frank McDougal and associates, and numerous claims held by H. N. Hansen.

Last winter McDougal drilled seven crosscuts 1,000 feet between with a 5-inch Kirk-Hillman drill, extending from claim No. 1 above Discovery to No. 4 below. These crosscuts were 600 feet in length with distances between holes of 25 to 50 feet. The average depth to a shale bedrock was 14 feet and values were reported ranging from 25 cents to 90 cents a yard. In 1937 three drill crosscuts were put down on Eureka Creek, a tributary of Dominion, four claim lengths up from its mouth. The sedimentary shale bedrock was encountered at depths ranging from 17 to 18 feet. No pay was encountered. KX 91-11

H. N. Hansen was engaged in drilling on bench claims alongside McDougal's ground. Due to the fact that Dominion has crossed and is cutting the east bank and has formed a rock bluff on this limit, an old channel is suspected parallel to the present channel. He has 17 holes down to date with bedrock ranging from 14 to 20 feet. Only two holes were reported as containing pay. KX 91-11

July 12. The headwaters of Dominion, Robin, Eureka and Marvel creeks were investigated and observations will be included in a general report.

Berkel The Marvel Creek Mining Company (Awe & Durand operations), managed by Charles Awe, began sluicing with dragline on May 18 of this season. This is the first active mining by this company and a total recovery of the first two cleanups was reported as totaling \$40,000. This gold was taken from cuts on the right limit of Marvel Creek on the Camp Robber claim above the cuts mined last year by Gus Wilson. On date of visit the dragline was operating 2,000 feet below Wilson's cuts on the upper Pioneer claim on the same limit. Here a large cut 250 feet by 300 feet was cleaned up during the visit and only a very small amount of gold was recovered. The explanation of the difference in the value of the cuts is very evident from observation. At the Wilson cuts on the right KX 91-11

limit on Camp Robber claim one finds intact on the very outside of the creek bend a very compact, distinctly stream laid gravel. It is well sorted and contains well worn boulders. Below on the Pioneer claim on the same limit the creek runs straight and this type of gravel is missing-- replaced by a loose poorly sorted and heavy wash gravel with occasional boulders on top. While Marvel Creek does not contain evidence of direct glaciation and ice movement, evidence shows that ice formed around Marvel Dome and surrounding mountains. During the melting stage of this ice cap a mud glacier apparently moved rapidly down Marvel Creek. This mud glacier, consisting of a general mixture of mud, boulders, various sizes of rocks and a great amount of water, cutting the insides of the bends and widening in the straighter courses, sluiced out the intact pay gravels leaving only narrow sections of the pay gravels intact, mainly on the outside of the bends and on the low benches. This action scattered the gold and mixed it with greater amounts of gravels and rocks. Normally where the best pay would be expected, it is found to be the lowest. In places, in the main valley-floor, bottoms of old channels were left intact and these contain the original gravels and contain good pay. The company is operating by hydraulicking and bulldozing into boxes, set in bedrock, and the dragline is used to stack tailings. Eighteen men are employed. The machinery and freight was hauled from Aniak last winter. Summer transportation is dependent on airplane at a cost of 8 cents a pound from Bethel.

July 13-21. The writer, on reports of new stakings and discoveries on Salmon and Kopechuck rivers and other creeks, made a trip on foot to the heads of these rivers. J. Cook of Anchorage has four 160-acre association claims and 17 single claims staked on Fisher Creek and nine 160-acre association claims on Salmon River below Cripple. R. Bragaw and M. Skriben of Anchorage are financing Cook in this venture.

Below the mouth of Cripple, Salmon River has a valley ranging from 2,000 to 3,000 feet in width. The river is entrenched in argillite bedrock to a depth of 30 to 40 feet and an entrenchment width from 100 to 150 feet. This entrenchment contains shallow bars and the gravels in the river itself are shallow. The river cuts the closely folded argillites at nearly right angle. These sediments are locally mineralized and contain small diabase dikes parallel to the strike. On the entrenchment benches and the main valley floor, a coarse wash gravel is exposed ranging in depths from 6 to 9 feet. The bedrock on these rims pan considerable fine flaky gold. This fine gold with occasional coarse heavy pieces was found extending from the mouth of Cripple to two miles below the mouth of Fisher Creek. Salmon River valley appears not to have been actively glaciated, but does contain outwash plain gravels. These gravels are from the extensively glaciated action on upper Cripple. The rough hard argillite bedrock acted as natural riffles for the fine flat gold during the melting run-off period and the beginning of the entrenchment. This run-off period deposited the heavy wash in the river valley. It is possible that certain sections of this main valley floor may contain workable pay, however, it will require careful testing and the problems of light gold and rough bedrock have to be considered.

The writer examined the headwaters of Fisher Creek which heads on the east side of Fisher Dome. Three mountains with granite cores occur in this vicinity. A soft yellow quartz porphyry was found along the contact of the granite and sediments of slate, graywacke and hardened argillites. This porphyry occurs as a marginal phase of the intrusive cores and also extends in dike form into the sediments. It is mineralized with pyrite and arsenopyrite and numerous quartz stringers mineralized with the same minerals were noted. Geologically, this creek should be favorable for placer. Fisher Creek has a length of 9 miles. Its valley width ranges from 400 to 600 feet and runs on the valley floor except for one mile up from its mouth where it is entrenched in bedrock. The creek falls 600 feet in 8 miles from its main head tributaries to its mouth on Salmon. Further testing of the creek is warranted. KX 91-16

P. Jensen and J. Davidson have numerous claims on Cripple Creek extending from Discovery at the mouth several miles up stream to above Loco Creek. This claim group is under lease to Rice & Peck of Bethel. Considerable drilling and test pitting has been done on this claim group during the last two winters. Fair values were reported beginning on a low bench on the right limit below the mouth of Dome Creek to the last drill line $2\frac{1}{2}$ miles up from the mouth of Cripple. Peck & Rice have purchased a dragline and equipment which will be freighted in this fall. A few of the pits were examined with depths to bedrock varying from 6 to 9 feet. A heavy wash continued from the top to within 2 or 3 feet of bedrock where a finer and more sorted wash was noted. The gold, rather fine and flat, occurs mainly on and in argillite bedrock. A copy of the values of holes and pits was promised. KX 91-9

The writer continued up Dome Creek to the head and crossed to the head of Loco, both creeks starting in glacial cirques, and thence across a granite plateau. This granite mass is of considerable length extending in an east-west direction for 10 to 15 miles. The unusual feature of this granite is that it rises to an elevation of 4,000 feet where the entire mass has been leveled off. Usually granite peaks are high and rugged with sharp peaks at the tops. Salmon River heads into this granite on the west, Quicksilver and other tributaries of the Kloleralik head on the south and southwest sides. The Kopechuck heads on the east side, while Dome, Loco and Cripple head on the north and northeast sides. It is very possible that these new discoveries had their source from this granite mass as did the gold in Cripple, Dome and Loco creeks, and these discoveries warrant further investigation. The exact location of the new discoveries on the Kopechuck and Quicksilver was not learned. They were made last fall and spring and no one was reported on the ground at the present time. KX 91-9

July 22-23. Return on foot to Nyac.

A The Rainey Creek Mining Company, managed by Al Jones is not operating this season on Rainey Creek in the Eek River section. Norman Stines was reported to have examined this creek and to have optioned the creek from Al Jones. Stines was said to have reported the ground as averaging two dollars a yard and expects to have a dragline on the creek this fall. Nat Brown reports he has six men employed on Trail Creek for the Togiak Mining Company and is bulldozing into boxes. Anderson Bros. are operating, shoveling-in on Canyon Creek.

July 23. Leave Nyac via Wien Airways following foothills to Platinum, and via boat to Goodnews Village.

July 24. Goodnews to Wattamus on foot.

101
Good news
The Union Construction Co. 2 $\frac{1}{2}$ -foot dredge owned by the Bristol Bay Mining Company started operating September 22 last year and due to a broken shaft closed on October 8. This year the dredge started June 2 and has been operating continuously since. The values as recovered by dredge show four times the value estimated from drill holes. This has been due to numerous boulders in the creek bed. As a result the dredge has produced nearly \$200,000 to date. The dredge started on one below discovery and came up stream onto Discovery to the mouth of Cascade Creek and has started back down. Two to three years ground is in sight for the dredge. Some dragline ground remains above Cascade on Wattamus which is too shallow to dredge. Dredging on this creek is rather difficult due to the great abundance of rocks and occasional boulders. The bedrock is mainly soft shale with occasional hard reefs. The structure of this dredge is the same as for a 4-cu. ft. dredge made to withstand the hard usage. The company is holding 130 claims in the district and employs a crew of 25 men, four of which are operating a 5-inch drill on Fox Creek and two men are sinking test pits on Bear Creek above Fox.

A few natives are engaged in groundsluicing on Even's Pup located between Wattamus and Fox Creeks. They have obtained a few ounces thus far this season.

July 25-26. At the request of Mr. Deleray to investigate the lode possibilities on upper Wattamus, the writer spent the day accompanied by Mr. Deleray. Samples of a supposed sugar quartz vein contained considerable pyrite. This was reported by Deleray, the discoverer, to be a vein 13 feet in width near a granite-shale contact. The location was found near the top of the divide between Wattamus and Cascade and the vein proved nothing more than an old remnant of a pre-existing overlying bluish dolomitic limestone which had been altered into a crystalline state. Some small joint veins of quartz, mineralized with arsenopyrite were found in the granite mass at the head of Wattamus, and these no doubt carry gold values.

July 27. Leave Wattamus Creek on foot. Arrive Kow Kow Creek. *K4101-104*

Geology 101
The Kow Kow Creek Mining Company started mining late this season on July 6, however, they have made considerable footage since, averaging nearly 1,000 yards a day. Mr. Howard is in charge and reports ground averaging \$1 a yard. Twenty men are employed including a three-man drill crew. The company has a new 6-inch Kirk-Hillman Special placer drill and is drilling above the dragline at the mouth of Peluck Creek on Kow Kow. The Kow Kow Creek placer deposit is an unusual deposit due to several geologic features. The gold is confined to a yellowish-clayey false bedrock that ranges from 5 to 16 feet in depth. This false bedrock is confined to a channel 30 to 60 feet in width and generally parallels the present creek. The bedrock contains a decomposed gritty clay rock and is believed to be originally a yellow porphyry. Occasionally the yellow channel splits into two or three separate channels and then converges into one again. Below the yellow channel a green channel is found composed of greenstone rocks and a greenish clay silt. Occasionally the yellow channel is all out away above the green channel and the pay is found in the green channel. The green channel normally does not contain pay. The new drill shows the bedrock to be at a depth over 40 feet and to consist of shale. No pay was found below the green channel and in most places below the yellow channel. The origin of these channels and gold is very evident as the geology of the basin head was investigated.

The head of Kow Kow Creek is located in the central portion of Island Mountains which extend on a northeast-southwest direction, and the stream flow northwest from the mountains out onto a broad level valley. Island Mountains consist of metamorphic sediments and interbedded lavas and porphyry. These dip northwest and the main central ridge is a hard quartzite. Overlying the quartzite is a band of schisted yellow porphyry. This porphyry contains very minute quartz seams and is mineralized. Bands of hematite and ilmenite were noted on the hanging wall. Greenstones overlie the porphyry. They consist of a wide band of lavas which are slightly mineralized, overlying the lavas is the main shale and slate-argillite formation, common in this section. During the cutting back of the head of Kow Kow Creek, the argillites and soft sediments were cut away rapidly. Thence the creek cut through the band of greenstone lavas, which are slightly mineralized, thus the green channels were formed. After cutting the greenstone lavas the stream began cutting the yellow porphyry. This porphyry is comparatively soft and as the creek began cutting into this rock, a small glacial cirque began forming, making the head rather wide. This glacial action, which was only small, did, however, cause a rapid erosive effect and as a result the yellow channels were formed by the stream depositing the porphyry sediments in the creek channels below. Since the gold source was in the porphyry, it was partly carried with the sediment wash to the channels and stream action later deposited the gold on top of the porphyry sediment, which acts as a clay bedrock, and a workable placer deposit was formed. Other false yellow clay bedrocks were noted on Butte Creek, Fox Creek, etc. These are considerably different and represent shore line deposits of either glacial lakes or elevated beaches.

July 28. A few holes and cuts were examined on Trail Creek, a tributary of Kow Kow. Trail Creek has been entrenched in glacial outwash gravels. Its valley width ranges from 200 to 300 feet in width and has cut to a depth of 20 to 30 feet. The deepest pit on the creek was 17 feet and this shows a loose poorly sorted coarse wash to the bottom. Scattered prospects have been found in the various cuts, but no bedrock or false bedrock has been encountered. Trail Creek heads into the same ridge as Kow Kow, but whether its head has cut into the yellow porphyry band is not known. If such has been the condition one could expect the same type of deposit as on Kow Kow. Mr. Tupper Thompson holds 13 claims on this creek from its mouth on Kow Kow up.

101
J. B. Huff is operating with four men employed on Butte Creek. ^{KX101-15} This operation is two miles north of Kow Kow. Mining consists of hydraulic ing and bulldozing into boxes set in a false bedrock. Low water had stopped mining on date of visit. The gravels are mined to an average depth of $4\frac{1}{2}$ feet to a yellowish-clayey false bedrock. Rocks are very numerous and the gravels are low grade ranging from 7 to 10 cents per bedrock foot. Yearly an average of 60,000 to 80,000 bedrock feet are mined.

101
H. D. Huff is prospecting and digging a bedrock drain on Fox ^{KX101-19} Creek 2 miles up from the mouth. He has a false bedrock of yellowish clay at a depth varying from 6 to 9 feet. No pay has been encountered to date. Huff holds 11 single claims and four 40-acre association claims on this creek. Wm. West has two 80-acre association claims above Huff on Fox and has two men engaged in sinking holes. A little fine gold has been found, but no pay.

101
The Goodnews Bay Mining Company has ten 40-acre association claims under lease on Snow Gulch. ^{KX101-22} This ground is owned by Pete Mosseness and was drilled by Strandberg & Sons, Inc. in 1937. Snow Gulch is a short tributary stream less than two miles in length and is located on the right limit of the Arolic River, 35 miles northeast of Platinum. On July 6 of this year the company started sluicing with dragline, hydraulic and caterpillar operation. Bulldozer and hydraulic are used to move gravel into boxes set in bedrock and the dragline is used to stack tailings. Twenty men compose the entire crew, working two 10-hour shifts and one shift of three men on a Bucyrus-Armstrong drill. The rate of mining is 2,000 yards daily and the first 20,000 yards netted \$5,000. The pay averages 300 feet in width at depths that range from 20 to 33 feet on Discovery claim at the mouth. The gold recovered is fine, flaky and flat with the largest pieces found weighing 250 milligrams. A small amount of cinnabar with medium amounts of a black and gray sand are associated. The bedrock is mica schist and soft. The gravels are

loose, poorly sorted, with bands from 3 to 5 feet in thickness of fine sandy and clayish material. The lower gravels are finer material with considerable granite sand. The upper gravels are apparently of glacial outwash origin. These apparently become less upstream. The formation up the gulch and at the head consists of banded granite gneiss which has been intruded by younger granitic minerals of later origin. Apparently this granite gneiss was capped with limestone into which the younger granitic minerals were intruded and possibly account for the origin of the gold. The occurrence of considerable garnets in the heavy sands, the occasional limestone remnant, and the numerous lime contact silicates supports this supposition.

July 29. Visited the property known as the Sulutak Miner, a partnership of Alaska Traders and Haralsen and Wickland, located on Sulutak Creek, three miles northeast of Snow Gulch. Sulutak Creek is a small creek one and one-half miles in length and is the first tributary of Keno Creek on its right limit above its mouth into the Arolic River. Its head is over the divide from Snow Gulch and it flows southeast. The discovery of gold was made at the mouth by Haralsen and Wickland last fall. The paystreak is from 60 to 70 feet in width and the gravels range from 3 to 10 feet in depth. The company owns four single claims. Operation is to start within a few days and will consist of hydraulicking and bulldozing into boxes. The bedrock is mica schist and the geology is the same as Snow Gulch. The gold is rough and fine, but heavy, and black sands are light with some garnets. Ten-cent pans were reported on bedrock on Discovery claim at the mouth. This should be an easy creek to mine with shallow gravels, few rocks and soft bedrock and a 5 to 6 per cent grade. Four men are employed.

Goodrich

KX 101-23

C. Atwell and J. Rouse were engaged in putting down a bedrock drain on Rainbow Creek. This creek has a length of two miles and flows into Tyone Creek as the first tributary on the right limit. Tyone Creek flows into Keno Creek. The head of Rainbow is directly over the divide from Snow Gulch and flows northeast. The same geologic conditions exist on the creek as on Snow Gulch. The above men own one 40-acre association, one mile up from the mouth. Harry Cloes has the remaining mile of creek below. The bedrock drain appears to be rather high up on the creek to expect the best pay. Fair pannings have, however, been found.

Another creek (un-named) heads opposite Snow Gulch into the Granite mountain and flows northwest. This creek is apparently a tributary of Bess Creek, which flows into the Arolic River near the north mouth of the latter. Its drainage basin is larger than Snow Gulch and it is a larger stream. This creek has not been prospected or staked, but from geologic evidence should contain some low pay similar to Snow Gulch as the formations are, at least in the vicinity of the head, the same.

123
The Clara Creek Mining Company is operating its dragline on lower Clara Creek just above the mouth on ground leased by the Goodnews Bay Mining Company and leased to the Clara Creek Mining Company. The pay is over 200 feet in width, which is somewhat wider than above and is lower grade. Last year a total of 612,000 bedrock feet were mined, and reports from other than the management were to the effect that the operation operated at a loss. This was ground near the head and marginal ground. About the same footage is expected this year. The gold content is, however, found greater on the lower claims. The lower pay gravels are shallower, ranging from 8 to 9 feet. All concentrates are run through a J. Hendy 2x3' ball mill and over a 4x8' Wilfley table. This operation has been found very satisfactory for this type of platinum concentrate. KX 123-10

Besides the Clara Creek operation, working 18 men, the company has 4 men groundsluicing on Dry Creek. They were reported as doing well. KX 123-7

The new gravel road from Platinum to both Clara and Squirrel creeks has been of considerable help in that supplies are now hauled by truck instead of caterpillar which has reduced freighting costs.

123
The dredge of the Goodnews Bay Mining Company started digging this season on May 20 and the dragline operation started sluicing on July 4. On considerable of the ground dredged last year on the right limit of Salmon River below the mouth of Platinum Creek, it was discovered that a deeper channel existed and the dredge had not been digging to bedrock. As a result the dredge has been redredging this section with profitable results. They are, however, nearly through and expect to be back on virgin ground. The operation has been fair according to Mr. Gould, dredgemaster, however, he is faced with breaking in an inexperienced crew. Three eight-hour shifts of five men each operate the dredge and two ten-hour shifts of five men each operate the dragline. Two drill crews are drilling on lower Salmon and the total men employed is 55. Several private houses are under construction and also a new bath house at the Squirrel Creek camp. The dragline operation on lower Platinum Creek has been doing exceptionally well. This is in ground that averages 25 feet in depth. Considerable of this ground is stripped before mining. Reports were to the effect that two clean-ups of the dragline alone during a period of seven days netted over 3,000 ounces. This ground is exceptionally rich and several platinum nuggets are found. Only one more season of this dragline ground remains. KX 123-2

The company is selling the platinum under a controlled limited amount per month under an agreement with brokers in New York and London. The official quoted market price of \$35 per ounce is apparently a fixed figure, as the actual market price is only \$30 per ounce or in that vicinity. Some of the royalties are paid directly by weighed platinum in accordance with percentages. This information, however, is not for publication. Confidential

A few minor accidents have occurred, the most serious a broken arm, however, the company has financed Ray Peterson to a new fast Fairchild plane with bases at Bethel and Platinum. Thus serious accident victims are flown immediately to Anchorage. Mr. Ed Olson, however, expressed the desire to have some first aid training.

Wages range from \$7 to \$12.50 with board. The company had under option several claims under lease on Margerite Creek and Slug River owned by Vance Garrison this spring. Twenty drill holes were put down and the lease has been definitely dropped.

August 1-3. En route Goodnews Bay to Sleitmut. The period from August 4 to 11 was spent in examining all cinnabar prospects in the vicinity of Barometer Mountain. All prospects are associated with light yellow porphyry dikes and sills in a complex of folded argillites and sandstones. The mineral cinnabar is in all cases associated with quartz and stibnite, with the latter mineral in small stringers and veins. The structure varies with the Red Devil and Barometer prospects associated with distinct veins and the others as veinlets in jointing and chimneys appearing as small stringer lodes. All structures were found to be related to the intense folding of the formations. Movement which accompanied the folding appears to have formed the openings and made openings for the very irregular dikes and sills of porphyry. A widely distributed mineralization followed the sill and dike injection into the effects of further folding producing the irregular network of the various deposits.

The Red Devil prospect is located on the left limit of the Kuskokwim River 8 miles below Sleitmut and 600 feet back from the river bank. This prospect was discovered in 1933 by Hans Halverson and the claim group consists of four claims, Red Devil Nos. 1 to 4, inclusive. The present owners are Hans Halverson and Nick Millick. Numerous float pieces of stibnite and cinnabar, some measuring 12 inches in thickness of massive ore, were found in the bed of a very small creek emptying into the Kuskokwim River. The vein outcrop was located above the creek and a tunnel measuring 76 feet was driven along the footwall of the vein. The vein strikes N. 40° W. and dips 54° SW. A 9-foot crosscut toward the vein shows 6 feet of cinnabar ore, however, the crosscut has not penetrated the entire width of the vein. The deposit is covered with 10 to 20 feet of loose sand and with the small amount of sluicing that has been done, it is at present impossible to determine its total width and length. However, pits above show the zone extends over 500 feet. The footwall of the vein is a band of concretionary sandstone and the hanging wall is banded argillites. Pieces and masses of a greenish to yellow porphyry dike were noted in the vein. This showing appears to be both the largest and contains a higher grade ore than other prospects visited in the section. At the present time Millick and Halverson have six natives engaged in sluicing off the sand from the deposit and erecting a furnace for treating ore. They have 75 tons of high grade ore obtained from sluicing operations which they intend to treat. The Parks furnace is to be moved and rebuilt on the Red Devil property. From the amount of float

See also detailed Report
in Kuskokwim Records
File

1 cinnabar contained in the gravels on bedrock and the apparent size of the deposit, this should make a profitable venture. More development is apparently needed and warranted.

82
Step 100-142
August 6. The outcroppings and underground development of the Parks cinnabar property were examined, located along the north shore of the Kuskokwim River at Parks. The present holdings at this prospect consist of two single claims known as the Ruth and Bessie, paralleling the Kuskokwim River. The surface showings are confined to an area 250 feet in width and 600 feet in length on the top of the river bank from 150 to 200 feet above the river elevation of approximately 250 feet above sea level. Numerous cuts, pits, and old shafts, more or less filled, expose the outcroppings which are covered with a fine sediment. The formations consist of dense black shales, a blocky gray sandstone, a concretionary sandstone, all classified as an argillite, with numerous dikes and sills of a yellowish quartz porphyry. The formations have been intensely folded and with the dikes and sills mainly paralleling the strike, with numerous shears and movement, make a highly complex structure. Cinnabar and metacinnabar with occasional seams of stibnite and a minor amount of realgar and orpiment were found mainly in seams, fractures, and small veinlets in all the formations mainly confined to localized small areas too small in extent to be classified as stockworks and corresponding to chimneys. Details of these deposits will be contained in a special report on the deposits.

The underground workings consist of three tunnels, two old tunnels driven by Parks and caved, except 50 feet of the lower tunnel which was made accessible by the 900-foot tunnel driven by Dunkls in 1936. This tunnel was driven a few feet above the water level into the bank, crosscutting the formation for 600 feet and thence following along the hanging wall of a porphyry dike to the east for 300 feet. The object of this long crosscut was to undercut the surface croppings. Only traces of cinnabar ore were encountered in the crosscut in the vicinities of the porphyry dikes. A 20-foot porphyry dike was cut 90 feet from the end and at this point a small chimney of ore was encountered. This chimney shows a length of 6 feet and has a width of 5 feet. Along the 300-foot drift on the hanging wall of the dike only minor traces of cinnabar were noted. While the surface showings appear to be rather extensive, the underground workings prove them to be only numerous minor occurrences.

August 7. On a report of a discovery of cinnabar disseminated in a large porphyry dike made by Jack O'Keefe and Andrew Benson and known as the Fairview prospect, the writer accompanied by Hans Halverson, investigated the workings. This prospect is located on the top of a

ridge 950 feet in elevation, two miles via trail south of the Kuskokwim River and one mile above Parks. The workings consisted of 15 pits sunk into loose bedrock on a yellow porphyry dike 100 feet in width. This dike strikes N. 60° W. and dips SE. This dike has been foliated and slightly cross fractured and makes a slabby loose talus. Occasionally a seam of the foliation and a cross fracture is filled with quartz and accompanying mineralizing solutions which precipitated minor amounts of cinnabar and stibnite. In most instances the minerals were confined to the quartz seams, however, a few spots were noted where the solutions or gases penetrated the porphyry a few inches making a disseminated porphyry ore. Assays of this type of rock were reported as giving only .8 per cent mercury. These minor occurrences are too widely distributed and too small in extent to make a minable ore.

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The Barometer group of eight claims owned by the Parks Estate and located three-fourths of a mile south of the Kuskokwim River, eight miles below Sleitmut was examined. Last year A. G. Skidmore had an agreement to do assessment work on the claims and retorted ten flasks of quicksilver. Here the occurrences of cinnabar, stibnite, realgar and orpiment are confined to a sheared vein zone. This zone can be traced by surface cuts on both sides of a small stream for a distance of 500 feet. The total underground workings consist of 161 feet of drift and cross-out. The tunnel follows the sheared zone, the latter produced by folding, for a distance of 121 feet and contains schisted dark shale and altered segments of light porphyry dike, in contact with sandstone. The 40-foot crosscut shows a 20-foot zone of low grade ore in schisted shale. Small bunches of stibnite were enclosed scattered within the shear zone, which shows considerable of the movement was later than the ore deposition. The complex of folding and shearing makes it difficult to determine the original type of existing orebody. A sketch of the tunnel was made and all sections showing cinnabar were sampled. Nick Millick has been appointed representative for all the Parks holdings and mentioned the total price for these two properties was \$30,000 to be paid at the rate of 15 per cent of the gross production with no cash payment down and no cost for prospecting and developing. The Red Devil group he intends to operate himself with no sale figure set.

August 8-9. The O. Willis cinnabar prospect, located two miles north of the Kuskokwim River from a point one mile below Parks, was visited. Here Willis holds nine claims, on which six short tunnels have been driven. Some of these were caved and not accessible. Several surface pits and shafts show the occurrence of cinnabar with small amounts of stibnite, over a zone 250 feet wide and 600 feet in length. The minerals occur along the contacts of porphyry dikes and in joint planes of the blocky gray sandstone. They occur in very thin seams with quartz and a weak dissemination in spots into the porphyry and sandstone. Due to the highly scattered occurrences and small amounts of the minerals, the property is not considered as being of any economic importance.

See also detailed report with - Geologic sketch

Considerable more test pitting was done on Taylor Creek this spring with reported favorable results. The Ervine-Wiseman lease of this ground fell through upon the arrival of the former upon the ground in April during the break-up with associates and entirely unprepared to test the ground under the existing conditions.

Ross Schaeffer and H. Winchell were reported prospecting up the South Fork of the Hoholitna. A. Benson and Frank Rider are prospecting on the headwaters of the Holitna River. A prospector reported to have the name of Schmidt is supposed to have made a discovery of placer gold in the Nushagak Hills. The location was not learned.